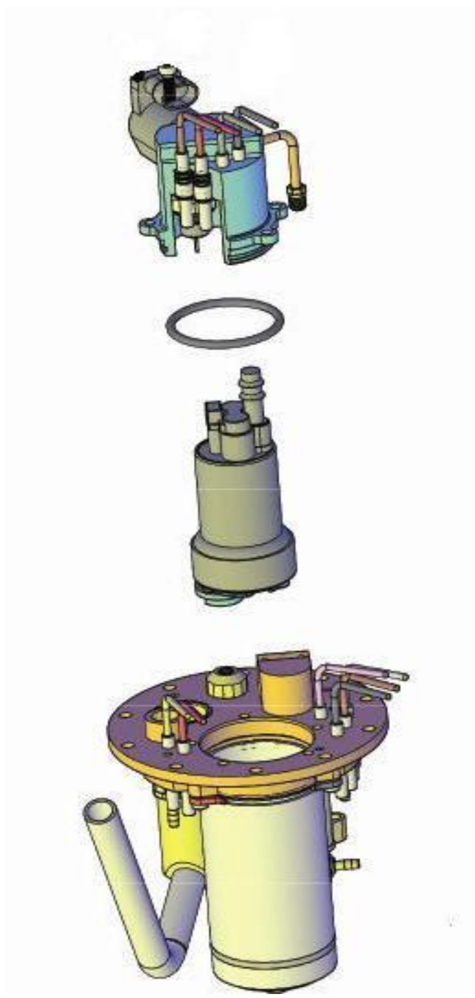
F14 MULTIVALVE FUEL PUMP SERVICE MANUAL



P11X4-9202-AA

Revision: A - Dated 10/18/11

Replaces: None

HARDWARE CONTENTS

P13X4-4105-AA - PROPANE OPTIMIZATION KIT - EMERGENCY VEHICLES	
COMPONENT	**QTY**
A - ROCKER SWITCH	1
B - 16 GA. GREEN/BLACK WIRE W/SPADE CONNECTOR	2
C - 1/4" CORRUGATE	1
D - CUT-OUT TEMPLATE FOR PADDLE SWITCH	1
E - ROCKER SWITCH BRACKET	1
F - BRACKET SCREWS	2

TOOLS REQUIRED

3mm ALLEN WRENCH
4mm ALLEN WRENCH
4mm ALLEN WRENCH SOCKET
8mm OPEN END WRENCH
13mm OPEN END WRENCH
TORQUE WRENCH (5 Nm CAPABILITY)
PHILLIPS HEAD SCREWDRIVER
ADJUSTABLE WRENCH OR CHANNEL LOCKS
10w30 MOTOR OIL (O-RING LUBRICANT)
LEAK DETECTION SOLUTION (SOAP & WATER)

INTRODUCTION

SAFETY WARNING

READ BEFORE STARTING SERVICING OF THE ICOM JTG SYSTEM.
ENSURE THAT ALL PERSONNEL IN THE IMMEDIATE AREA ARE AWARE OF THESE REMINDERS.

PROPANE IS A NONTOXIC, NONPOISONOUS GAS THAT IS EXTREMELY FLAMMABLE. IF SOMETHING IGNITES IT, YOU COULD BE BADLY BURNED. KEEP SPARKS, OPEN FLAMES AND SMOKING MATERIAL AWAY FROM PROPANE.

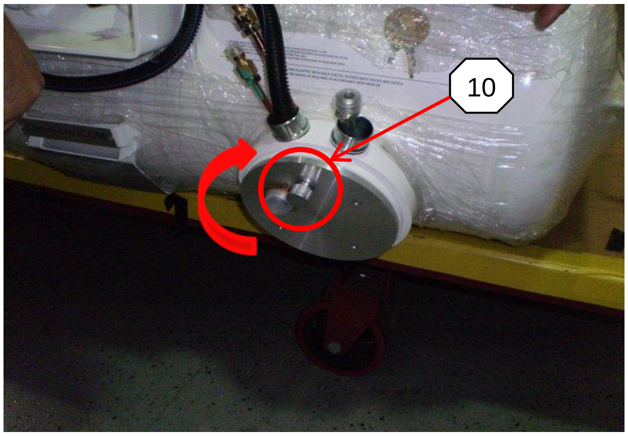
LIQUID PROPANE IS EXTREMELY COLD (-40° F) AND CAUSE SERIOUS BURNS WHEN CONTACTING YOUR SKIN OR EYES. PREVENT CONTACT WHEN HANDLING LPG BY WEARING APPROVED PROTECTIVE GLOVES AND EYE PROTECTION.

PROPANE IS STORED UNDER PRESSURE. THE FUEL SYSTEM OPERATES AT PRESSURES OF UP TO 312 PSI. A SUDDEN RELEASE OF PROPANE CAN CAUSE SERIOUS INJURIES.

THESE INSTRUCTIONS ARE INTENDED FOR TECHNICIANS WHO ARE CERTIFIED BY ALL AGENCIES THAT GOVERN PROPANE INSTALLATIONS AND THE TRANSPORTATION OF PROPANE. THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) PUBLISHES A CODE BOOK OF RULES (NFPA 58) THAT APPLY TO THE STORAGE, HANDLING, TRANSPORTATION AND USE OF LIQUEFIED PETROLEUM GAS (LPG). LOCAL PROPANE SUPPLIERS SUCH AS FERRELGAS AND AMERIGAS, AS WELL AS SOME AGENGIES SUCH AS THE TEXAS RAILROAD COMMISION AND PERC (PROPANE EDUCATION & RESEARCH COUNCIL) OFFER INFORMATIVE COURSES TO HELP PREVENT SEVERE INJURY OR DEATH TO YOU OR SOMEONE ELSE IF YOU DON'T FULLY UNDERSTAND LPG AND ITS PROPERTIES.

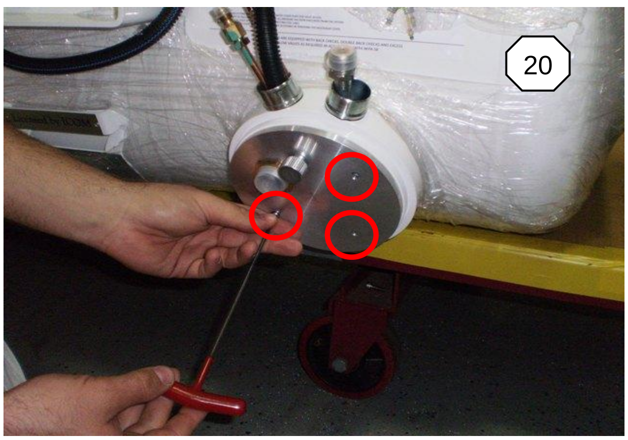
ICOM NORTH AMERICA
Alternative Fuel Systems

☺	**INSPECTION**	?	**ITEM NUMBER**
△	**TORQUE**	⬡	**OPERATION**
▽	**CRITICAL PROCESS**		

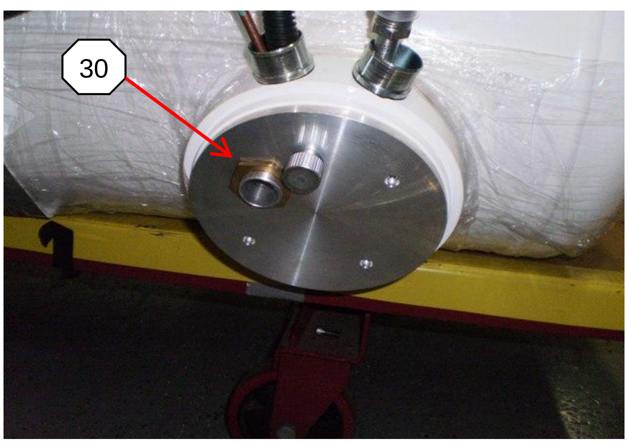


10) LOCATE MANUAL SUPPLY SHUT-OFF VALVE ON MULTIVALVE COLLAR COVER; ROTATE KNOB 'CLOCKWISE' UNTIL IT STOPS TO FULLY CLOSE SUPPLY VALVE

20) USING A 3mm ALLEN WRENCH, REMOVE (3) SCREWS IN COLLAR COVER AND SET ASIDE



30) USING A PAIR OF CHANNEL LOCKS OR AN ADJUSTABLE WRENCH, REMOVE THE NUT FROM THE TANK RELIEF PORT AND SET ASIDE (IF EQUIPPED WITH PRV TUBE)

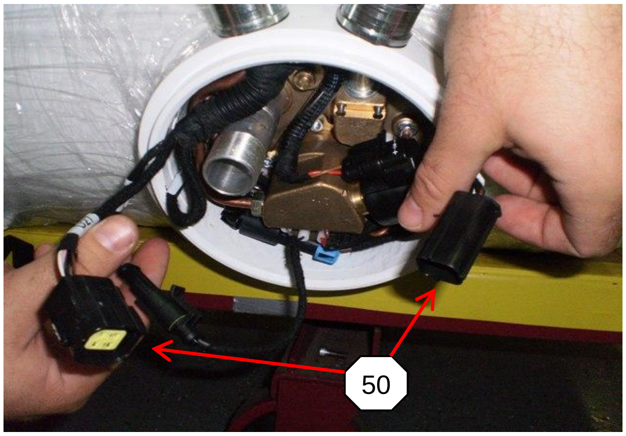


40) CAREFULLY REMOVE COLLAR COVER AND SET ASIDE

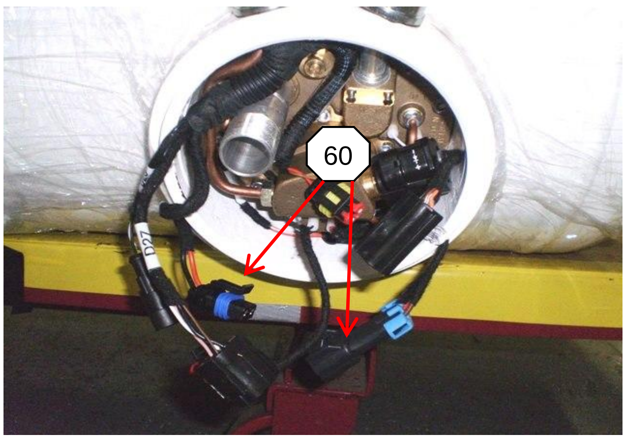


ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS
						3mm ALLEN WRENCH
						ADJUSTABLE WRENCH

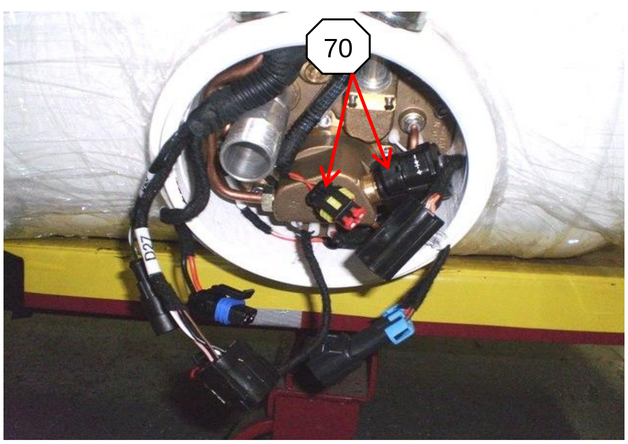
PROCESS NAME MULTIVALVE FUEL PUMP REPLACEMENT INSTRUCTIONS	**REV** A
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50) LOCATE AND GRASP THE FUEL SUPPLY / COMMUTATOR WIRE HARNESS LEADS; CAREFULLY DISCONNECT THE CONNECTORS



60) LOCATE AND GRASP THE LPG FUEL PUMP WIRE HARNESS LEADS (RED & BLACK WIRES); CAREFULLY DISCONNECT THE CONNECTORS

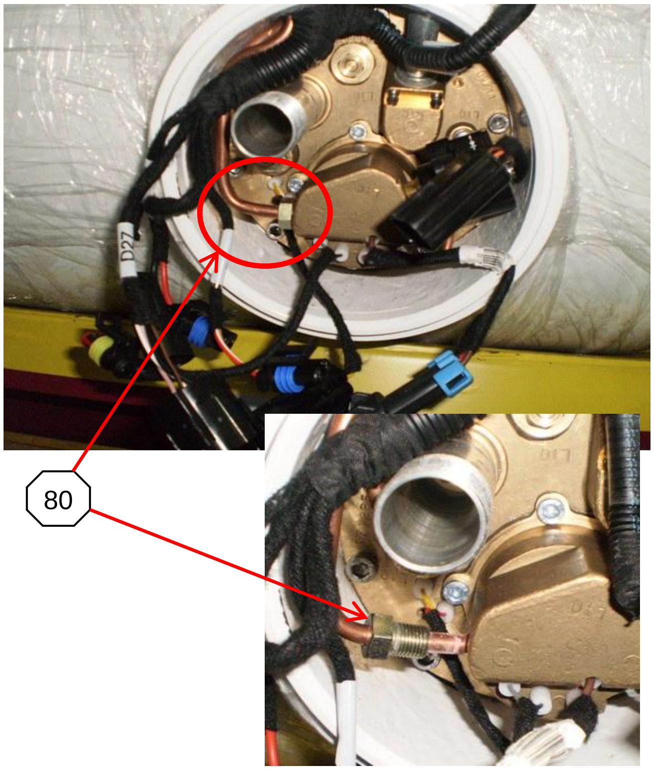


70) LOCATE AND GRASP THE ELECTROVALVE SUPPLY SOLENOID WIRE HARNESS LEAD (RED & BROWN WIRES); CAREFULLY DISCONNECT THE CONNECTOR FROM THE SOLENOID

ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS

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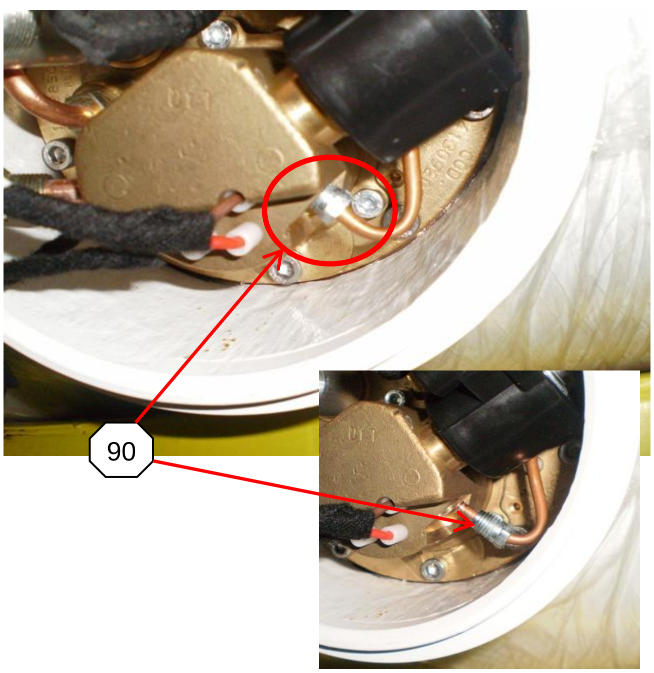
Symbol	Meaning
(smiley face)	INSPECTION
(triangle)	TORQUE
(inverted triangle)	CRITICAL PROCESS
? (box)	ITEM NUMBER
(octagon)	OPERATION

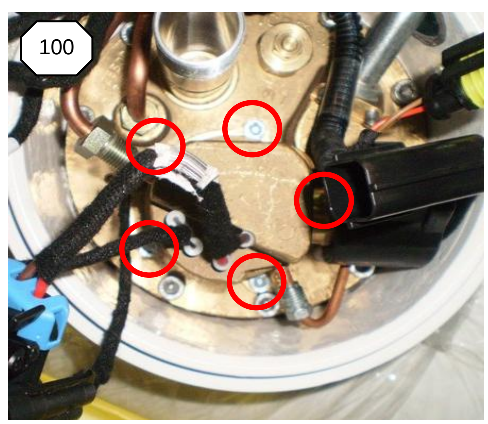


80) LOCATE FUEL SUPPLY LINE ATTACHED TO THE FUEL PUMP HOUSING; USING A 13mm WRENCH, CAREFULLY LOOSEN THE FITTING AND REMOVE THE LINE FROM THE HOUSING

90) LOCATE FUEL PUMP RETURN LINE ATTACHED TO THE FUEL PUMP HOUSING; USING AN 8mm WRENCH, CAREFULLY LOOSEN THE FITTING AND REMOVE THE LINE FROM THE HOUSING

100) LOCATE (5) SOCKET HEAD SCREWS THAT SECURE THE FUEL PUMP HOUSING TO THE MULTIVALVE; USING A 4mm ALLEN WRENCH, REMOVE THE (5) SCREWS AND SET ASIDE





ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS
						4mm ALLEN WRENCH
						8mm OPEN END WRENCH
						13mm OPEN END WRENCH

PROCESS NAME	REV
MULTIVALVE FUEL PUMP REPLACEMENT INSTRUCTIONS	A
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110) CAREFULLY REMOVE THE FUEL PUMP HOUSING AND FUEL PUMP ASSEMBLY FROM THE MULTIVALVE

120) LOCATE AND DISCONNECT THE FUEL PUMP WIRE HARNESS LEADS

130) ROTATE FUEL PUMP COUNTER CLOCKWISE TO EXPOSE THE (2) FUEL PUMP ATTACHMENT SCREWS

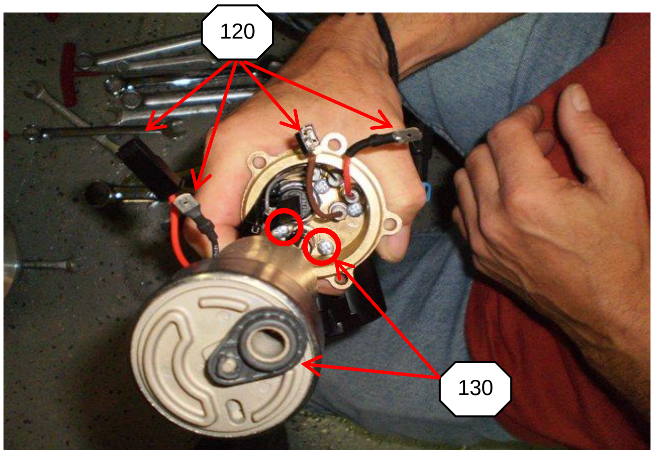
140) USING A PHILLIPS HEAD SCREWDRIVER, REMOVE THE (2) FUEL PUMP ATTACHMENT SCREWS AND SET ASIDE



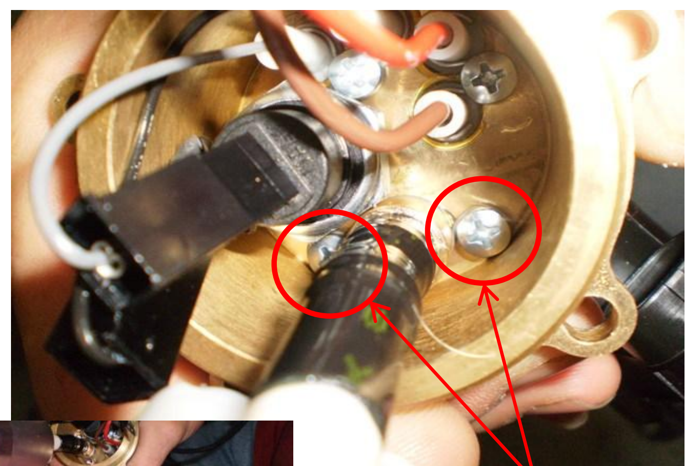
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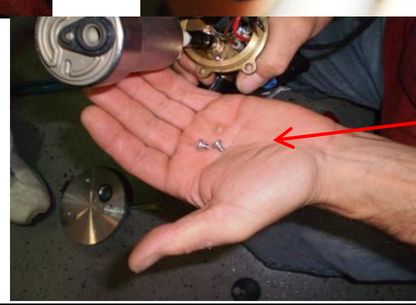


120



130





140

ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS
						PHILLIPS SCREWDRIVER

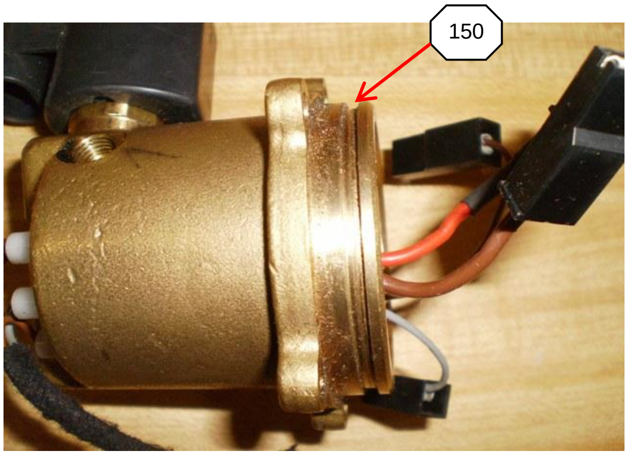
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INSPECTION **ITEM NUMBER**

TORQUE **OPERATION**

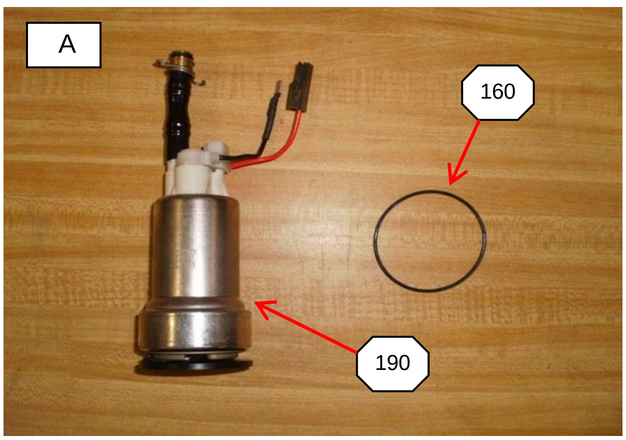
CRITICAL PROCESS



150) CAREFULLY REMOVE THE ORIGINAL O-RING FROM THE FUEL PUMP HOUSING AND DISCARD

160) OBTAIN O-RING FROM FUEL PUMP SERVICE KIT (A)

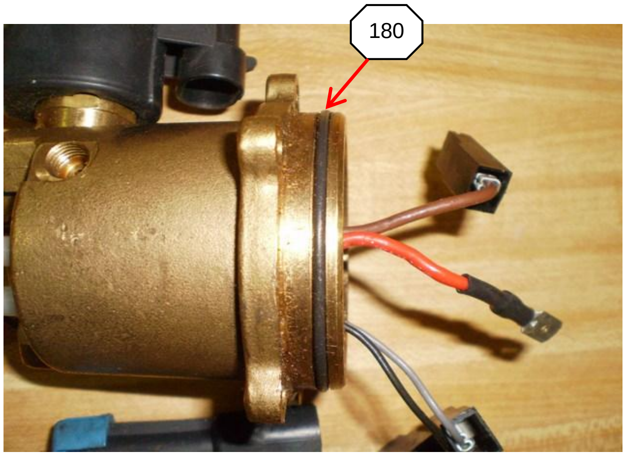
170) FULLY LUBRICATE O-RING WITH 10W30 MOTOR OIL

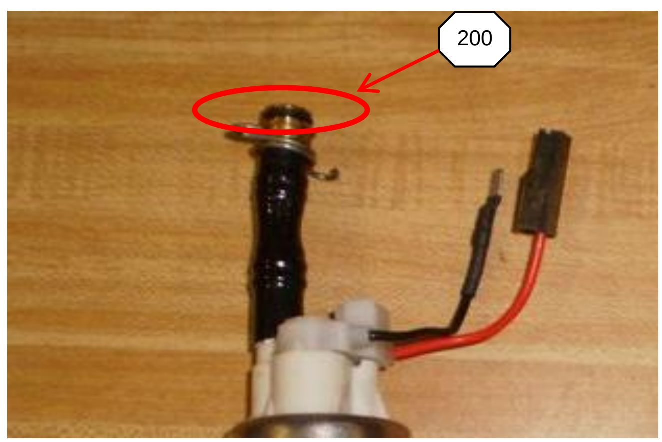


180) USING A FLAT TIP SCREWDRIVER, ALIGN AND SEAT O-RING ONTO THE FUEL PUMP HOUSING **(DO NOT ROLL O-RING ONTO FUEL PUMP HOUSING AS DAMAGE TO THE O-RING MAY OCCUR)**

190) OBTAIN FUEL PUMP FROM FUEL PUMP SERVICE KIT (A)

200) FULLY LUBRICATE O-RING ON FUEL PUMP SUPPLY HOSE FITTING





ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS
A	P11X4-6900-AA	1	FUEL PUMP SERVICE KIT			10w30 MOTOR OIL

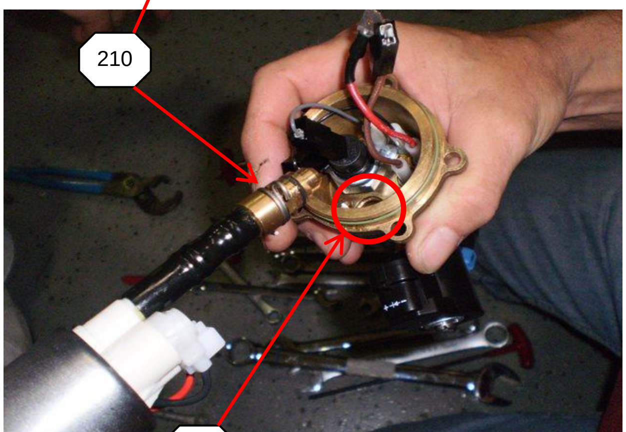
PROCESS NAME MULTIVALVE FUEL PUMP REPLACEMENT INSTRUCTIONS

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210) POSITION FUEL PUMP TO HOUSING; LOCATE MOUNTING CLIP ATTACHED TO FUEL PUMP SUPPLY HOSE FITTING

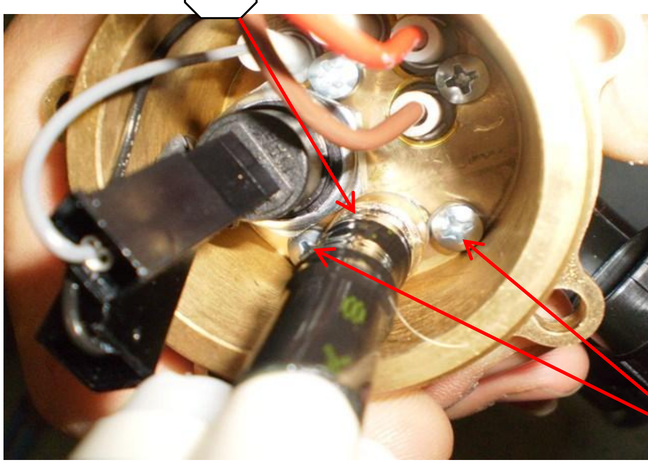


220) CAREFULLY ALIGN AND SEAT SUPPLY HOSE FITTING ON FUEL PUMP INTO FUEL PUMP HOUSING

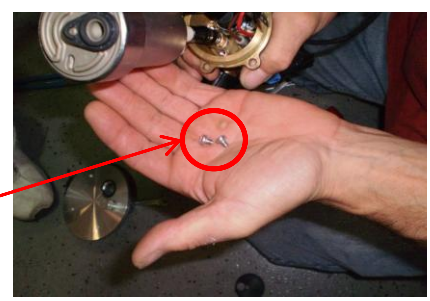
210

220

230) OBTAIN (2) SCREWS REMOVED IN STEP 140; ALIGN HOLES IN MOUNTING CLIP TO HOLES IN FUEL PUMP HOUSING; INSERT SCREWS THROUGH MOUNTING CLIP HOLES AND HAND TIGHTEN INTO FUEL PUMP HOUSING



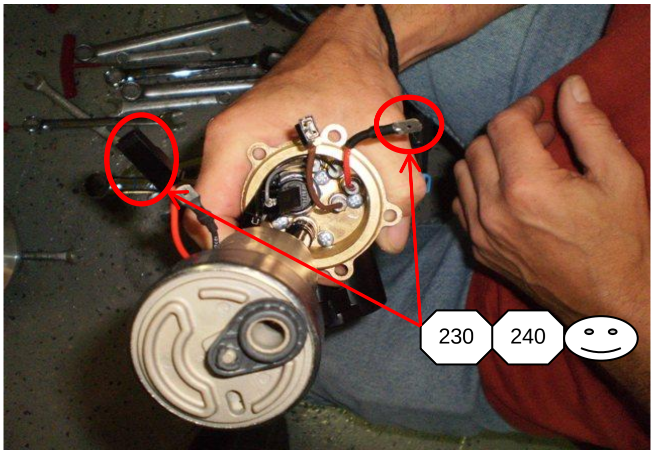
230



ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS
						PHILLIPS SCREWDRIVER

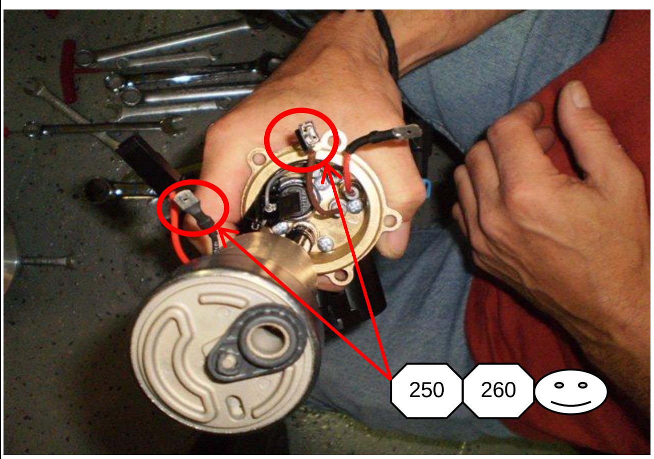
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INSPECTION	? ITEM NUMBER
TORQUE	OPERATION
CRITICAL PROCESS	



230) LOCATE AND GRASP RED WIRE WITH SPADE CONNECTOR ATTACHED TO THE FUEL PUMP HOUSING: LOCATE AND GRASP RED WIRE WITH BLACK FEMALE CONNECTOR ATTACHED TO FUEL PUMP

240) ALIGN AND SEAT SPADE CONNECTOR INTO FEMALE CONNECTOR **(SLIGHTLY PUSH/PULL CONNECTORS TO VERIFY CONNECTORS ARE FULLY SEATED)**

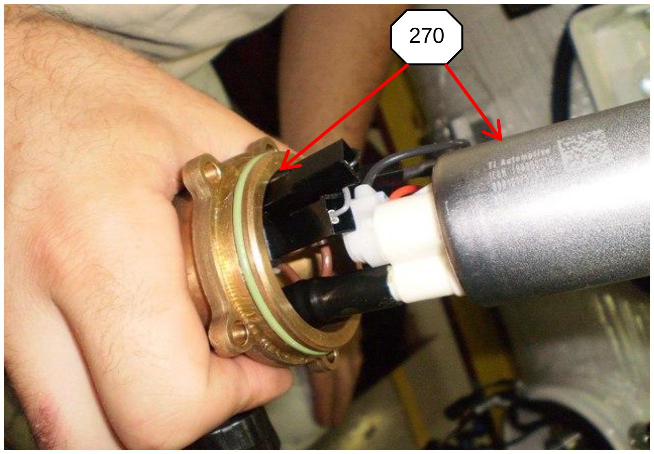


250) LOCATE AND GRASP BROWN WIRE WITH FEMALE CONNECTOR ATTACHED TO THE FUEL PUMP HOUSING; LOCATE AND GRASP BLACK WIRE WITH SPADE CONNECTOR ATTACHED TO THE FUEL PUMP

260) ALIGN AND SEAT SPADE CONNECTOR INTO FEMALE CONNECTOR **(SLIGHTLY PUSH/PULL CONNECTORS TO VERIFY CONNECTORS ARE FULLY SEATED)**

ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS
				PROCESS NAME MULTIVALVE FUEL PUMP REPLACEMENT INSTRUCTIONS		REV A
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	INSPECTION	? ITEM NUMBER
	TORQUE	OPERATION
	CRITICAL PROCESS	



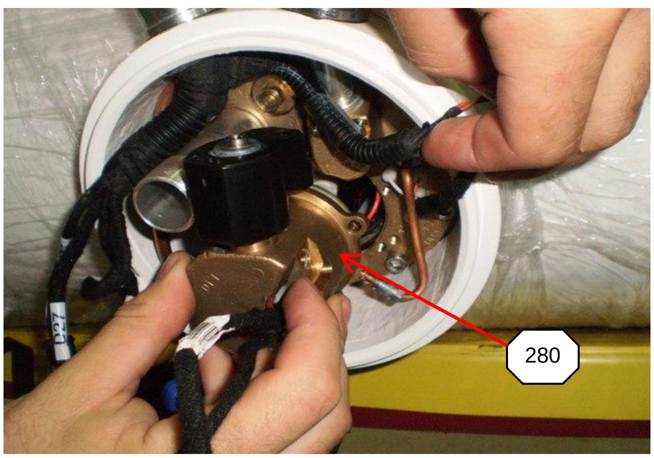
270) POSITON FUEL PUMP TO LINE UP BELOW THE FUEL PUMP HOUSING AS SHOWN

280) CAREFULLY INSERT FUEL PUMP INTO MULTIVALVE AS SHOWN

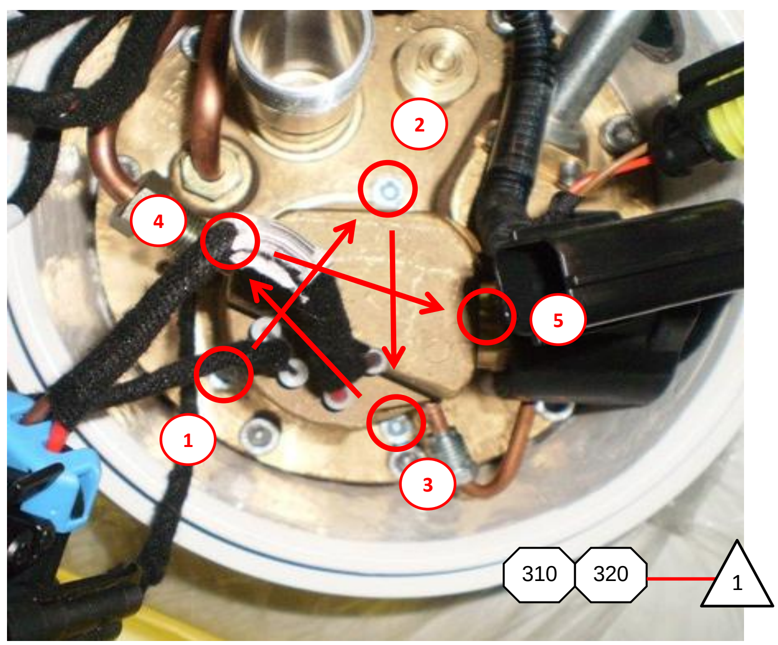
290) ALIGN AND SEAT FUEL PUMP HOUSING INTO MULTIVALVE; POSITION MOUNTING HOLES IN THE FUEL PUMP HOUSING TO THE MOUNTING HOLES IN THE MULTIVALVE

300) OBTAIN (5) SOCKET HEAD SCREWS REMOVED IN STEP 100

310) USING A 4mm ALLEN WRENCH, INSTALL AND HANDSTART HANDSTART (5) SCREWS INTO MULTIVALVE



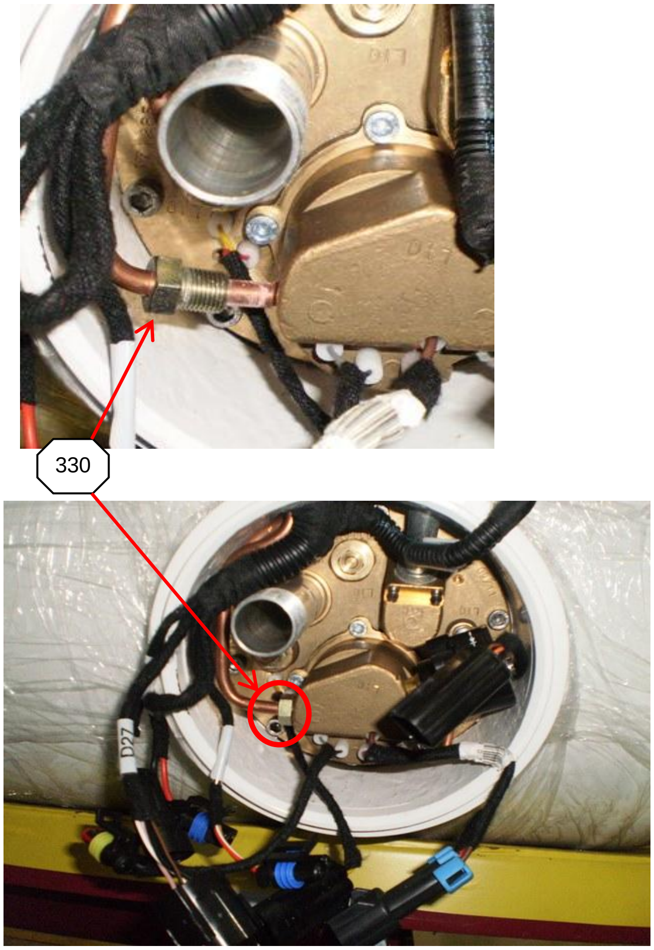
320) TORQUE SCREWS DIAMETRICALLY TO 5.5 Nm +/- .50



ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS
				1	5.5Nm +/- .50	4mm ALLEN SOCKET
						TORQUE WRENCH

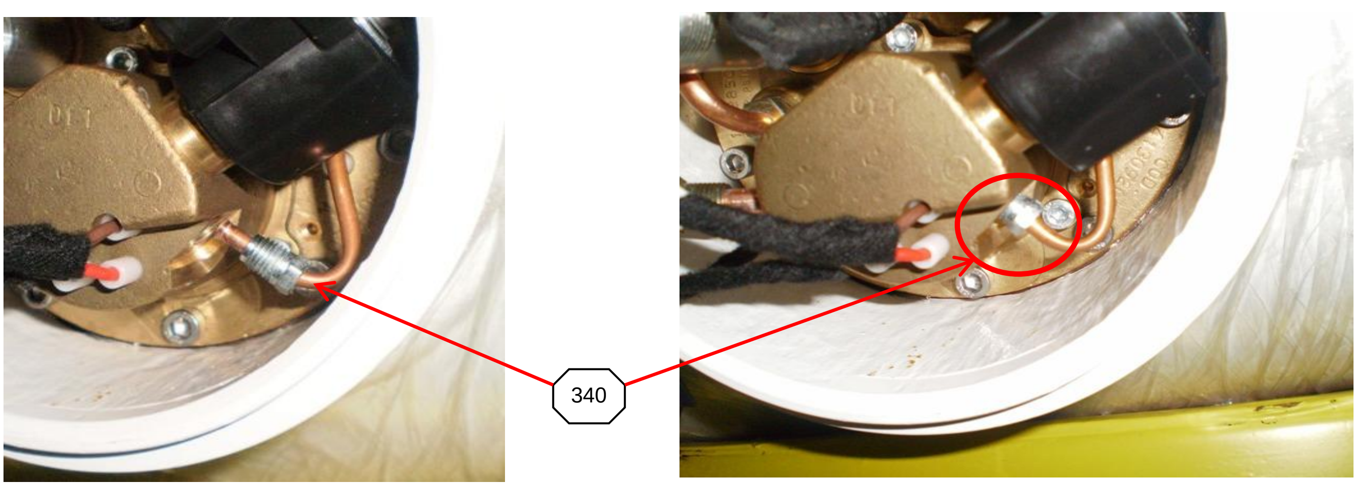
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	TORQUE	OPERATION
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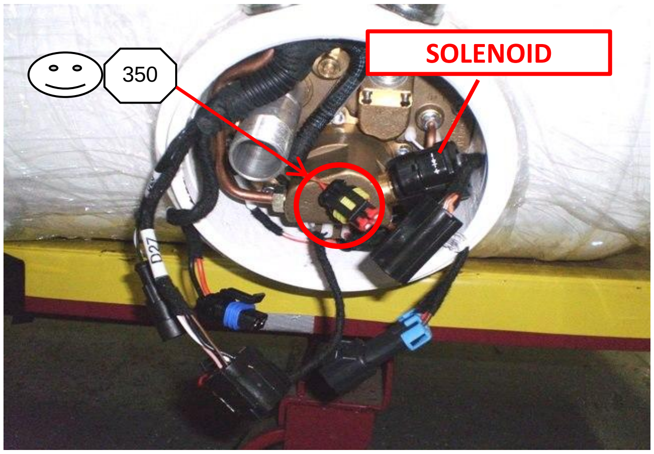
330) LOCATE FUEL PUMP SUPPLY LINE; HANDSTART FITTING ON LINE INTO HOUSING; USING AN 13mm WRENCH, FULLY TIGHTEN THE FITTING INTO THE HOUSING

340) LOCATE FUEL PUMP RETURN LINE; HANDSTART FITTING ON LINE INTO HOUSING; USING AN 8mm WRENCH, FULLY TIGHTEN THE FITTING INTO THE HOUSING

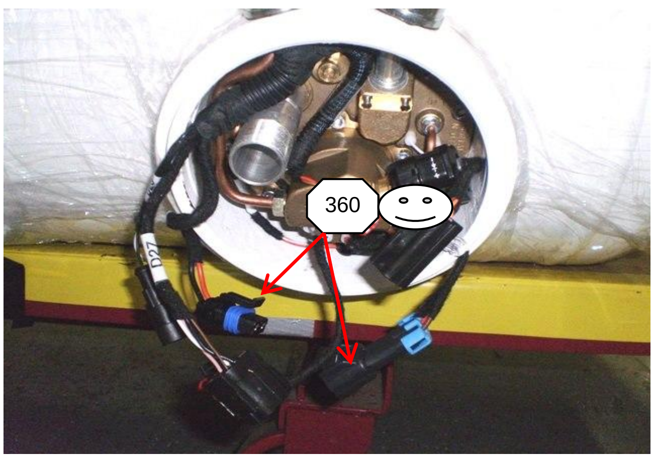


ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS
						8mm OPEN END WRENCH
						13mm OPEN END WRENCH

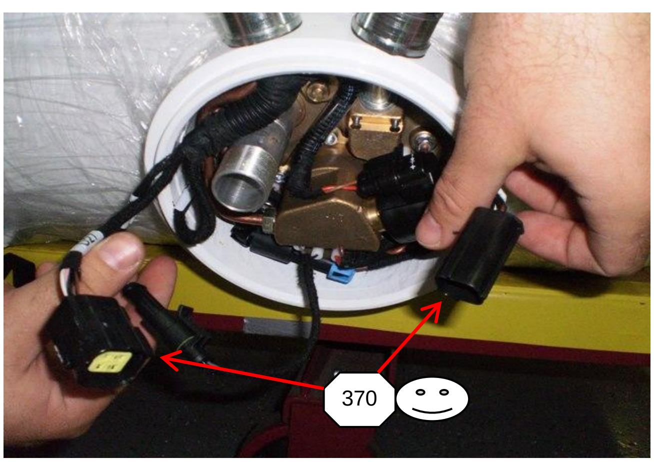
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350) LOCATE AND GRASP THE ELECTROVALVE SUPPLY SOLENOID WIRE HARNESS LEAD (RED & BROWN WIRES); ALIGN AND SEAT THE CONNECTOR INTO THE SOLENOID **(SLIGHTLY PUSH/PULL CONNECTOR TO VERIFY FULLY SEATED INTO SOLENOID)**



360) LOCATE AND GRASP THE LPG FUEL PUMP WIRE HARNESS LEADS (RED & BLACK WIRES); ALIGN AND SEAT CONNECTORS TOGETHER **(SLIGHTLY PUSH/PULL CONNECTORS TO VERIFY CONNECTORS ARE FULLY SEATED)**

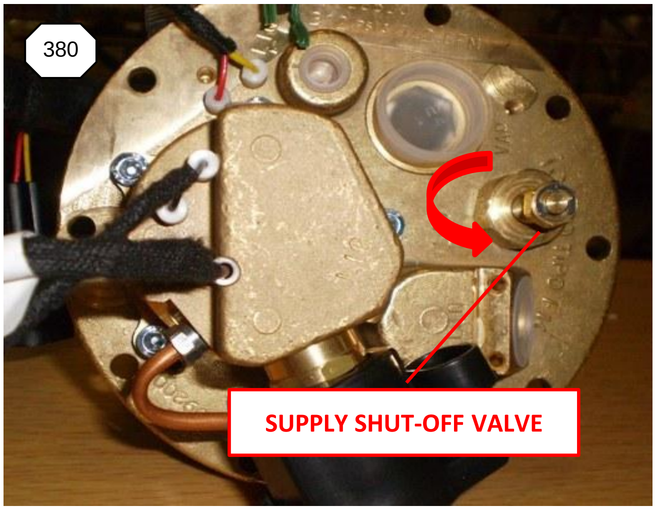


370) LOCATE AND GRASP THE FUEL SUPPLY / COMMUTATOR WIRE HARNESS LEADS; ALIGN AND SEAT CONNECTORS TOGETHER **(SLIGHTLY PUSH/PULL CONNECTORS TO VERIFY CONNECTORS ARE FULLY SEATED)**

ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS

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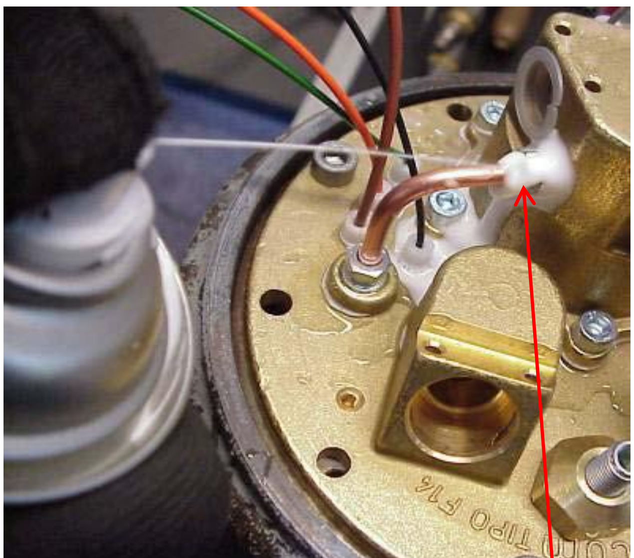
INSPECTION	ITEM NUMBER
TORQUE	OPERATION
CRITICAL PROCESS	

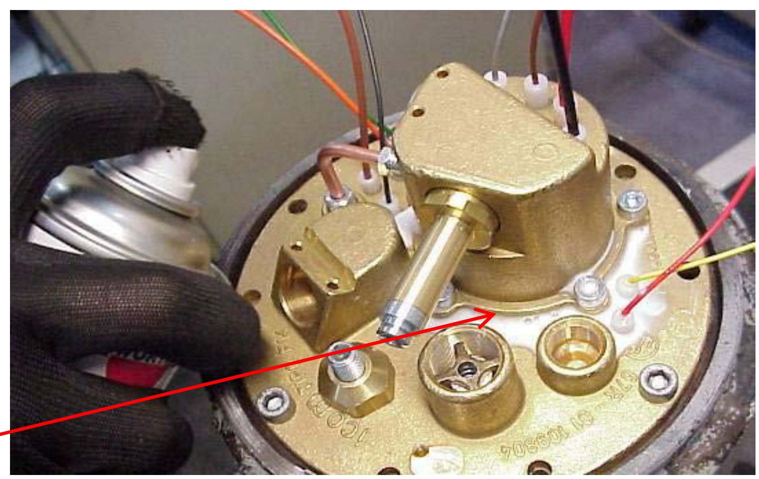


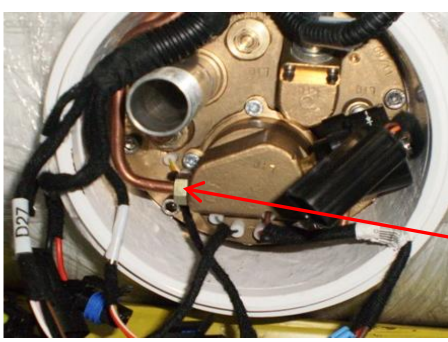
380) LOCATE SUPPLY SHUT-OFF VALVE ON MULTIVALVE: FULLY ROTATE KNOB 'COUNTER CLOCKWISE' TO OPEN SUPPLY VALVE

390) USING A LEAK DETECTION SOLUTION (SOAP & WATER), SPRAY ALONG THE BOTTOM EDGE OF THE FUEL PUMP HOUSING AND AROUND THE SUPPLY AND RETURN LINES TO VERIFY NO LEAKS ARE PRESENT; **(IF A LEAK IS DETECTED, THE SUPPLY SHUT-OFF VALVE MUST BE COMPLETELY CLOSED BEFORE A REPAIR CAN BE STARTED, ROTATE THE KNOB 'CLOCKWISE' UNTIL THE KNOB STOPS TURNING TO CLOSE THE VALVE)**

400) IF NO LEAKS ARE PRESENT, USE AN AIR HOSE AND NOZZLE TO REMOVE THE LEAK DETECTION SOLUTION FROM THE AREAS INSPECTED; LEAVE THE SUPPLY VALVE IN THE OPEN POSITION



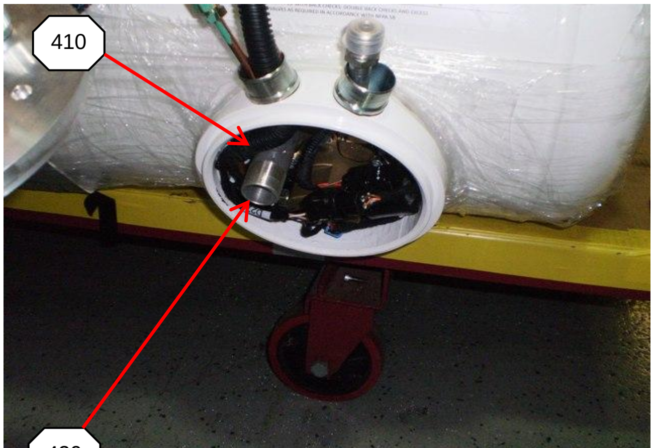




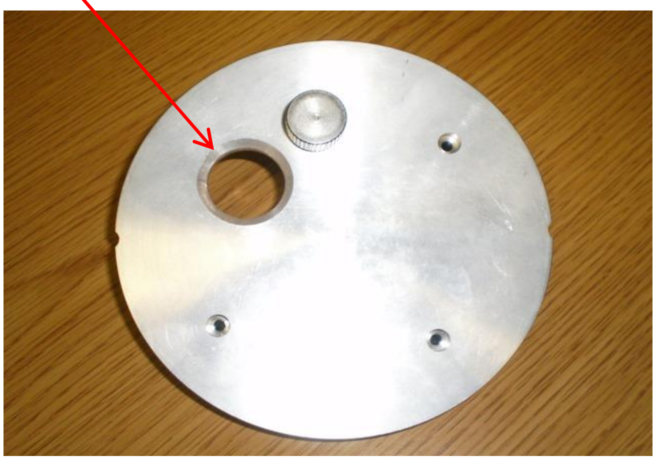
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ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS

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410) CAREFULLY INSERT THE WIRE HARNESS LEADS BACK INTO THE MULTIVALVE COLLAR AS SHOWN

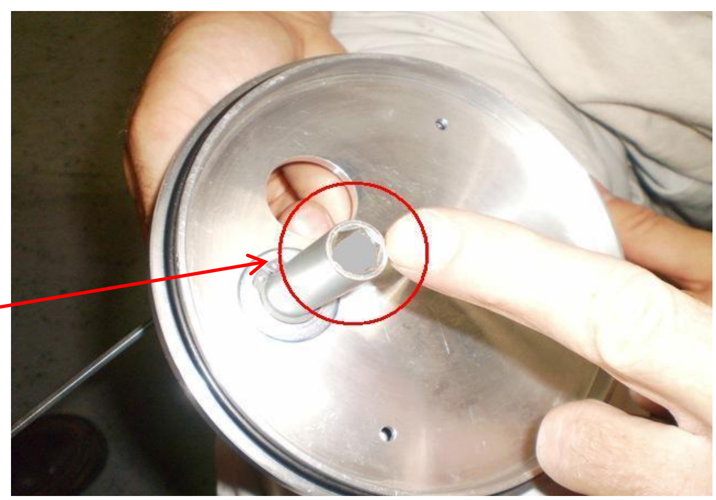
420) OBTAIN THE COLLAR COVER REMOVED IN STEP 40; LOCATE PRV TUBE (IF EQUIPPED) ON MULTIVALVE; ALIGN AND INSERT PRV TUBE INTO LARGE OPENING ON MULTIVALVE COLLAR

430) LOCATE THE AUXILIARY SHUT-OFF KNOB ON THE COVER; ALIGN AND SEAT THE AUXILIARY KNOB SHAFT ONTO THE SHUT-OFF KNOB ON THE MULTIVALVE

440) ALIGN AND SEAT COLLAR COVER ONTO COLLAR



430



ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS

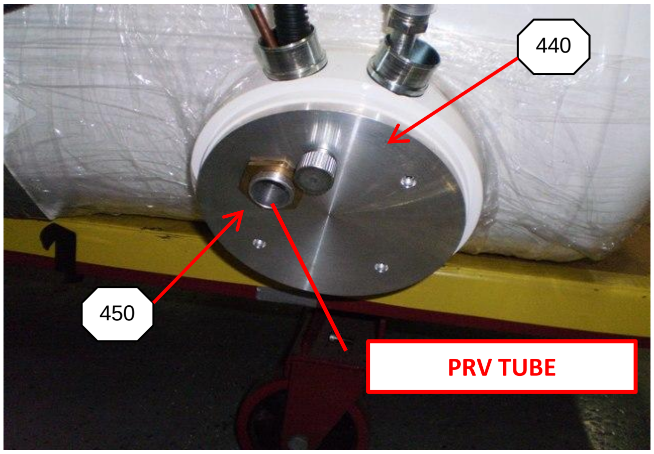
INSPECTION

TORQUE

CRITICAL PROCESS

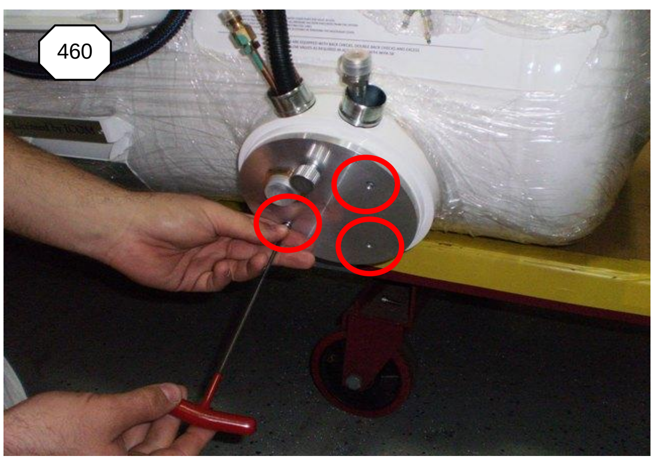
? ITEM NUMBER

OPERATION



440) ALIGN AND SEAT COLLAR COVER ONTO COLLAR

450) IF EQUIPPED WITH PRV TUBE, OBTAIN NUT REMOVED IN STEP 30; HANDSTART NUT ONTO TUBE; USING A PAIR OF CHANNEL LOCKS OR AN ADJUSTABLE WRENCH, TIGHTEN THE NUT SECURELY ONTO THE LID



460) OBTAIN (3) COLLAR COVER SCREWS REMOVED IN STEP 20; INSERT SCREWS INTO HOLES IN LID; USING A 3mm ALLEN WRENCH, HAND TIGHTEN SCREWS INTO MULTIVALVE

ITEM	PART NUMBER	QTY	DESCRIPTION	TORQUE		TOOLS
						3mm ALLEN WRENCH

				PROCESS NAME MULTIVALVE FUEL PUMP REPLACEMENT INSTRUCTIONS	**REV** A
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